

Summary

The umbilical cord blood (UCB) represents the earliest haematological sample of the fetus/neonate without invasive intervention or any risk for mother and her child during sampling. From the UCB we are able to determine a lot of information about the clinical status of newborn.

The fetal response to preterm birth with IAI is characterised by increased levels of proinflammatory cytokines in the UCB. Our aim was therefore to investigate the association of IAI and immunological parameters interleukin IL-6, IL-8, matrix metalloproteinase 8 (MMP-8), pentraxin 3 (PTX3), soluble form of Toll-like receptor 2 (sTLR2) and soluble form of scavenger receptor CD163 (sCD163).

The strengths of our study include quantification of sTLR2, sCD163, PTX3 and MMP-8 in UCB and their relationship to IAI that has never been examined.

There was a significant increase in inflammatory markers IL-6 and sCD163 in UCB in infants exposed to preterm premature rupture of membranes (PPROM) and to histological chorioamnionitis (HCA) compared to those without intraamniotic inflammation (IAI). There was significant differences in IL-6, IL-8, MMP-8 and sCD163 levels in those with and without funisitis in women with PPRM. However, no significant differences were observed between levels of sTLR2 and PTX3 in UCB in subjects with and without IAI.

The most important correlations in UCB were identified between the levels of IL-6 and IL-8 and then sCD163 and MMP-8 in women with PPRM and HCA/funisitis.

The newborn weight and gestational age were significantly negative correlated with UCB concentration of IL-8 in women with PPRM and HCA.

The best cut-off point for the UCB IL-6 in the identification of PPRM women with the presence of funisitis was found 9.3 pg/mL (sensitivity 100 %, specificity 74 %). The cut-off level for the UCB IL-8 was determined 92.5 pg/mL (sensitivity 77 %, specificity 77 %) and for the UCB sCD163 1462.0 ng/mL (sensitivity 85 %, specificity 74 %). The UCB levels of markers for diagnosis HCA and molecules sTLR2, PTX3 and MMP-8 for diagnosis funisitis did not meet the requirements for the diagnostic efficiency test (AUC over 75 %).

IAI is associated with various activation of the immune system of the fetus. The markers measurement in UCB would be used in the early diagnosis of IAI and would be helped for appropriate medical intervention.